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PATENT APPLICATION  
Docket No.: 3003.2.10B

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Sanchaita Datta and Ragula Bhaskar  
Serial No.: 10/034,190  
Filed: December 28, 2001  
For: DOMAIN NAME RESOLUTION MAKING IP ADDRESS  
SELECTIONS IN RESPONSE TO CONNECTION STATUS  
WHEN MULTIPLE CONNECTIONS ARE PRESENT

**PETITION FOR SPECIAL EXAMINING PROCEDURE**  
**(Accelerated Examination Of New Application)**

**RECEIVED**

The Honorable Commissioner of  
Patents & Trademarks  
Washington, D.C. 20231

APR 29 2003

Technology Center 2100

Commissioner:

Pursuant to M.P.E.P. § 708.02 VIII, Applicants and Assignee respectfully petition the Office for accelerated examination of the above-identified patent application.

As required, a statement regarding pre-examination search and a detailed discussion of references are submitted below. Copies of the references identified in the search and deemed most closely related to the subject matter encompassed by the claims were filed in a First Information Disclosure Statement on 29 April 2002.

If the Office determines that the claims should be made subject to a restriction requirement, an oral election of claims to be initially examined will be made without traverse.

**Pre-examination Search**

A pre-examination search was made both for relevant patents and for relevant non-patent references, including an online search that used keyword-driven search engines with key words and phrases such as "DNS", "domain name", "resolve", "resolution", "available", "path", "status", "connection", and "reliable".

With respect to U.S. patents, the classes and subclasses of patents identified in the search are as follows:

<u>Class</u>	<u>Sub-class(es)</u>
370	60, 218, 229, 400
395	200.11, 200.56
709	105, 227, 237, 245

### **Detailed Discussion of the References**

Several points should be noted in connection with the references. First, some of the claimed subject matter was used to guide the search. It does not follow from the mere fact that certain references are listed here that one of ordinary skill in the art would have combined these or similar references without the benefit of seeing the claims. In the event it makes a rejection under § 103 using these or any other references, the Office must identify a suggestion or motivation in the art for combining the references.

Second, the discussion below tries to be both complete and concise. By necessity, however, the discussion rests on a good-faith prediction as to which topics the Office will find of interest in examining this application. All participants in the examination process are free to decide later that other aspects of these references and/or other references also merit attention. Of course, the Office will also notify Applicants if examination indicates that the claims and/or references should be interpreted or characterized in some way different from that now presented.

Third, the pre-examination search is not a substitute for the Examiner's search. Likewise, the information provided here is meant to be an aid to the Examiner; it is not meant to be a substitute for the Examiner's own independent review and analysis of the references. Although the information given here is believed to be accurate, errors may nonetheless be present. Also, points whose significance is not currently understood may be discussed here inadequately or not at all.

Fourth, to promote conciseness this initial discussion of the patentability of the claims focuses on certain features of the independent claims. However, other features and combinations of features in both the independent claims and the dependent claims also provide proper grounds for allowing the claims. A lack of patentability will not automatically follow from some later determination (either before or after issuance) that the claim features discussed expressly below are insufficient. Each claim must be viewed as a whole.

Fifth, the technical background of the invention is also discussed in the Technical Background of the Invention portion of the application, and that discussion is incorporated herein by this reference.

Sixth, citation of a reference does not imply adoption of all definitions given in the reference, or agreement with all assertions made in (or implied from) the reference. In particular and without limitation, terms may be used differently in a reference than in the present application; in the event of a conflict, the meaning given to a term (expressly or implicitly) in the application and/or in other statements by Assignee should govern.

Seventh, the dates in reference citations are merely presumptions based on copyright notices, retrieval dates, and/or similar indicia. A document's actual publication date, for instance, may be different than the date printed on the document. Indicia in a single document may specify multiple dates, or a range of dates, with only some of the dates qualifying the document as prior art. A document may also be submitted, even though submission is not required because the document's stated date makes it presumptively not prior art, if the document contains information that might be helpful, such as technical background or a discussion of work that may have been done earlier than the document's stated date.

Finally, a failure to expressly state here that a given reference does not teach a certain claim element does not mean that the reference teaches the claim element. If the Office takes the position that a claim element is taught by reference, then the Office must identify to Assignee the location(s) in the reference which support that position.

**Datta:** U.S. Patent No. 6,295,276 to Datta et al.

The inventors of this patent are the same as in the present application. As indicated in the Abstract, this patent describes methods, configured storage media, and systems for increasing bandwidth between a local area network ("LAN") and other networks by using multiple routers on the given LAN; Figures 2 and 3 each show a configuration with multiple routers in parallel. Data packets are multiplexed between the routers using a novel variation on the standard address resolution protocol, and other components. On receiving data destined for an external network, a controller or gateway computer will direct the data to the appropriate router. In addition to providing higher speed connections, the invention described in the '276 patent provides better fault tolerance in the form of redundant connections from the originating LAN to a wide area network such as the Internet.

The invention described in the present application is directed to configurations involving DNS resolution based on the status of paths to servers, as opposed to the status of the servers themselves, e.g., "a code component which receives a domain name resolution request specifying the domain name, selects an IP address from the data component based on information about the status of a path to the server" (independent claim 1), "determining that at least one candidate connection component is operating reliably and thus is a reliable connection component, the reliable connection component being in a path to a server having the domain name, the reliable connection component having an IP address; and supplying the IP address of the reliable connection component in a response to the resolution request" (independent claim 8), "receiving a DNS resolution request; selecting an IP address based on connection component status; supplying the selected IP address in response to the request" (independent claim 13). Although the '276 invention might be usable in a configuration that also embodies the present invention, such embodiments are not required by, nor discussed in, the '276 patent.

**Mogul:** U.S. Patent No. 6,262,987 to Mogul.

As indicated in the Abstract, this reference discusses a system and method for translating names and addresses of host computers in a distributed network of host

computers. The names of a substantial number or all of the host computers of the network are collected by probing the network from a collecting site. The names are stored in a table. Name-address bindings, which may include time-to-live information, are obtained for each of the collected names. The name-address bindings can be compressed and transferred to a cache memory of a recipient computer, such as, for example, a proxy server. The recipient computer receives translation requests for any of the name-address bindings stored in the memory. These translation requests can include first translation requests for the any of the name-address bindings stored in the memory. In response to the requests, including the first requests, the recipient computer replies the name-address bindings to reduce response latencies.

As noted above, each independent claim of the present application requires a DNS resolution that selects an IP address based on path or connection status; claims 1 and 13 refer directly to status, and claim 8 refers to reliability as a type of status. A keyword search of the '987 patent failed to find any instances of "status" or "reliab", and the reference apparently fails to teach the claimed DNS resolution based on path or connection status.

**Bhaskar:** U.S. Patent No. 6,253,247 to Bhaskar et al.

The inventors of this patent are the same as in the present application. As indicated in the Abstract, this patent describes methods and systems for transmitting a user's data between two computer networks over physically separate telephone line connections which are allocated exclusively to the user. The user's data is placed in data packets, which are multiplexed onto the separate connections and sent concurrently to a demultiplexer. The data packets contain a computer network address such as an Internet protocol address. A dynamic address and sequence table allows the demultiplexer operation to restore the original order of the data after receiving the packets. The set of connections constitutes a virtual "fat pipe" connection through which the user's data is transmitted more rapidly. Additional users may be given their own dedicated "fat pipe" connections.

As noted above, each independent claim of the present application requires a DNS resolution that selects an IP address based on path or connection status. Although the '247 invention might be usable in a configuration that also embodies the present invention, such embodiments are not required by, nor discussed in, in the '247 patent.

**Zisapel:** U.S. Patent No. 6,249,801 to Zisapel et al.

As indicated in the Abstract, this reference discusses a method for load balancing requests on a network, the method including receiving a request from a requestor having a requestor network address at a first load balancer having a first load balancer network address, the request having a source address indicating the requestor network address and a destination address indicating the first load balancer network address, forwarding the request from the first load balancer to a second load balancer at a triangulation network address, the request source address indicating the requestor network address and the destination address indicating the triangulation network address, the triangulation network address being associated with the first load balancer network address, and sending a response from the second load balancer to the requestor at the requestor network address, the response having a source address indicating the first load balancer network address associated with the triangulation network address and a destination address indicating the first requestor network address. This patent is assigned to Radware Ltd., which is apparently also the vendor of technology discussed in the **LinkProof** reference identified below.

The Domain Name System (DNS) is discussed, e.g., at column 1 lines 16-67 and column 7 lines 56-57. DNS is also discussed in the present application. However, a keyword search of Zisapel for "status" led to statements indicating that the '801 invention is concerned with server status rather than path or connection status as called for by the present invention: "Load balancers 16 and 18 are alternatively referred to herein as LB1 and LB2 respectively. LB1 and LB2 typically maintain a **server status table 22 and 24 respectively, indicating the current load, configuration, availability, and other server**

**information** as is common to load balancers. LB1 and LB2 also typically periodically receive and maintain each other's overall status and load statistics such that LB1 and LB2 can know each other's availability. ... LB2 preferably periodically sends a status report 30 to LB1, the virtual IP address 100.100.1.0 of LB1 being known in advance to LB2. **Status report 30 typically indicates the availability of server farm 12** and provides load statistics, which LB1 maintains. ... As shown in the example of FIG. 1A, **server status table 22 of LB1 indicates that no servers in server farm 10 are available** to service client 26's request, but indicates that server farm 12 is available." (from column 5 lines 21-61) (emphasis added). It therefore appears that this reference does not teach the claimed DNS resolution based on path or connection status.

**Kapoor:** U.S. Patent No. 6,205,489 to Kapoor

Although not identified as such on its face, this patent is apparently a continuation of U.S. Patent No. 5,884,038 to Kapoor filed May 2, 1997, which issued March 16, 1999. The '489 patent was filed January 5, 1999, shortly before the '038 patent issued. The two patents appear to have the same specification and similar claims. The undersigned respectfully submits that under the duty of candor a copy of the '038 patent would be cumulative of the information already provided. However, a copy of the '038 patent will be provided on request if the Examiner disagrees.

As indicated in the Abstract of these patents, they discuss a method for providing Internet protocol (IP) addresses with a domain name server (DNS) for multiple web servers of an Internet host. In one embodiment, each web server of an Internet host having multiple web servers is assigned a relative weight based on the individual processing power of the particular web server. As DNS resolution requests are received from client domains, the DNS returns IP addresses for the web servers such that the total number of times that each IP address of the web server is returned is proportional to the relative weight of each server relative to the total weight of all the servers. In another embodiment, the client domains that have most frequently accessed the web servers according to recent web server access

logs are identified. In addition, the total number of accesses of each client domain is considered such that static arrays may be constructed to apportion the web servers among the client domains that most frequently access the web servers. As such, each of the client domains that most frequently access the web servers are assigned to a particular web server such that the percentage of requests served by each particular web server is proportional to the relative weight of that web server. In doing so, the probability of a load imbalance between the web servers is reduced.

A keyword search of the '489 patent failed to find any instances of "status". Server reliability is discussed, e.g., at column 5 lines 26-29: "If a web server has crashed and is therefore unavailable to serve clients, the DNS discontinues providing the IP address of the down server to clients thereby providing improved service to the client with increased reliability."; and at column 8 lines 51-54: "By detecting faulty web servers in a timely manner, overall Internet response time and reliability is improved in accordance with the teachings of the present invention." These concerns over reliability are directed at the web servers, rather than the path to the servers, as noted in the present application at page 3 lines 11-13. As a result, it appears to the undersigned that these patents do not teach the claimed DNS resolution based on path or connection status.

**Ebrahim:** U.S. Patent No. 6,154,777 to Ebrahim

As indicated in the Abstract (and discussed in the present application beginning at page 2 line 18), this reference discusses a context-dependent, multiply binding name resolution system. A name resolver is provided, connected to either a requester's system or a receiver's system, or both. Requests to a given service or domain name are resolved to the appropriate IP address. The intended recipient of the request is resolved based upon a combination of one or more predetermined criteria, including: information about the sender (e.g. geographical location, specific requester identity, etc.); information about the intended recipient (e.g. load balance at the receiver, type of service, etc.); information contained within the request itself (e.g. type of service requested); or other information (time of day,



date, random selection of recipient, e.g.). The system is implemented in hardware and/or software, and the resolution criteria can be made interdependent or independent.

A keyword search of Ebrahim failed to find any instances of “status” or “reliab”. In view of this, the undersigned concludes that this reference does not teach the claimed DNS resolution based on path or connection status.

**ONeil:** U.S. Patent No. 6,128,279 to O’Neil et al.

As indicated in the Abstract, this reference discusses a system which distributes requests among a plurality of network servers. The system receives a request from a remote source at a first one of the network servers, and determines whether to process the request in the first network server. The request is processed in the first network server in a case in which it is determined that the request should be processed in the first network server. On the other hand, the request is routed to another network server if it is determined that the request should not be processed in the first network server. As discussed in column 3 line 21 to column 4 line 36, these determinations are made on the basis of factors such as server workloads, DNS request content (Uniform Resource Indicator), and/or whether servers are online.

A keyword search of this reference failed to find any instances of “status” or “reliab” so apparently this reference does not teach the claimed DNS resolution based on path or connection status.

**Civanlar:** U.S. Patent No. 5,617,540 to Civanlar et al.

As indicated in the Abstract, this reference discusses a name mapper, name servers, and multimedia servers which are connected to a multimedia manager. Each client has the name of a multimedia server, i.e., a virtual host name, from which it can obtain multimedia service. The name server stores associations of server host names to layer-3 addresses. When a client initiates a multimedia session, it requests the layer-3 address of the server that corresponds to its server’s name. The name server sends the layer-3 address of the one

of the multimedia servers that is currently designated as corresponding to that name. The multimedia client stores the name-to-layer-3 address binding in its cache. The multimedia client then establishes communications with the multimedia server at that layer-3 address and clears its cache. The dynamic name-to-layer-3 address binding in the name server is managed by the name mapper, which may be collocated with the multimedia manager or may be located on a separate server. The multimedia server manager collects real-time status information so that it knows the availability of the multimedia servers in the network. If a multimedia server, whose layer-3 address is presently mapped to from a virtual host name, becomes unable to serve additional clients, the multimedia server manager sends a message to the name mapper to modify the name to layer-3 address binding. The modification specifies an available server's layer-3 address to be bound in place of the server that became unable to serve additional clients.

"Status" is apparently discussed in this reference only with respect to multimedia servers; see, e.g., column 6 lines 40-52. A keyword search failed to find any instances of "reliab". The undersigned therefore concludes that this reference does not teach the claimed DNS resolution based on path or connection status.

**StoneSoft White Paper:** "StoneSoft Multi-Link Technology White Paper", pp. 1-15, October 2001 (copyright date 1996-2001)

The overview on page 2 of this reference identifies subjects such as patent-pending "Multi-Link" technology, network connectivity, fault tolerance, availability, firewalls, load balancing, and use of multiple ISPs, which are discussed in the reference. A discussion of the Domain Name System (DNS) and Multi-Link technology on pages 8-9 may be of particular interest to the Examiner.

Part of the stated range of copyright dates (1996-2001) is early enough to qualify at least part of this document as prior art if those dates are accurate. The undersigned respectfully submits that the portion of the document dealing with the Multi-Link technology and DNS (on pages 8-9) is most pertinent to the present application, so the date of that portion

is of greatest interest, at least to the undersigned. The **StoneSoft Press Release** discussed below indicates that the Multi-Link technology become public on or about 19 March 2001. The present application claims three priority dates, none of which is more than one year after 19 March 2001, and two of which are before 19 March 2001. One could therefore conclude that the Multi-Link technology and DNS discussion, at least, does not qualify as prior art.

Nonetheless, if the Examiner questions the priority claims, or determines that information in that discussion (or elsewhere) would be a basis for rejection if it were sufficiently early, or chooses to use the information in some other way, then the Examiner may do so, after which Assignee will respond accordingly. Of course, the Examiner is also free to conclude that the StoneSoft references do not teach the claimed invention under §102 or §103, regardless of the dates involved. That conclusion will be evident in the record **if the Examiner does not cite a StoneSoft reference** in any claim rejection following this specific invitation to consider whether either or both of the StoneSoft references should be cited.

**StoneSoft Press Release:** “StoneSoft Announces StoneGate High Availability Firewall and VPN Solution for Large-Scale Enterprises, ISPs and Carriers”, pp. 1-3, 19<sup>th</sup> Mar. 2001

This document announces the StoneGate<sup>TM</sup> product, which “contains many breakthrough technologies never before seen in a firewall including Multi-Link Technology”, a technology that is discussed both on page 2 of this press release and (in greater detail) in the **StoneSoft White Paper** identified above. Although the white paper discussed DNS, a keyword search of this press release found no instances of “DNS” or “domain”. Page 2 of the press release indicates that the StoneGate product may not have been actually released until April 2001. The effective dates of the press release and the StoneGate product are thus recent enough to make them presumptively not be prior art, but as noted above the Office may treat them as it chooses, and Assignee will respond accordingly.

**LinkProof:** “radware LinkProof Internet Link Traffic Management”, pp. 1-4, copyright date 2000

This reference discusses traffic management for multi-homed networks. Page 2 states that patent pending Optimal Content Routing considers the real-time load and the “link cost”, among other factors, and that it redirects traffic through the optimal links. The “patent pending” statement may refer to what is now the **Zisapel** patent discussed above, which issued in 2001. Page 2 also states that “LinkProof continuously monitors the health of each Internet connection. It checks the path through each router by periodically monitoring the health of internal and external network nodes. LinkProof automatically detects failures such as link, router, DNS server and other failures.” However, this reference does not otherwise discuss “DNS”, and does not discuss “domain name” resolution.

**3-DNS:** “3-DNS Network Controller”, pp. 1-4, copyright date 2001

This reference identifies several “patent-pending” subjects on page 2, and at least touches on other subjects that may interest the Examiner, including “the health of load balancing products, servers, and caches on your network” (page 1 under “Health Checks”) and “performance metrics it collects from load balancers, servers and cache devices throughout the network” (page 1 under “Intelligence”).

The present application claims three priority dates: 12/29/2000, 3/6/2001, and 12/13/2001. One could therefore conclude that this reference does not qualify as prior art. Nonetheless, if the Examiner questions the priority claims, or determines that information in this reference would be a basis for rejection if it were sufficiently early, or chooses to use the reference in some other way, then the Examiner may do so, after which Assignee will respond accordingly.

Of course, the Examiner is also free to conclude that this reference does not teach the claimed invention under §102 or §103, regardless of the dates involved. That conclusion will be evident in the record **if the Examiner does not cite the 3-DNS**

**reference** in any claim rejection after this specific invitation to consider whether the 3-DNS reference should be cited.

**Cisco:** "Cisco DistributedDirector", pp. 1-6, copyright date 2000

This reference discusses a product for distributing processing loads across geographically dispersed Web servers. The product is a Domain Naming System (DNS) server that dynamically binds one of several possible IP addresses to a specific host name based on proximity in the network; it sends a client to the next-closest server in the network. According to a statement on page 4, "distance" between clients and servers is "determined by topological proximity and client-to-server link latency"). This reference apparently describes another technology that is focused on server status instead of teaching the present invention's DNS resolution based on path or connection status as claimed.

**NxT1:** "Selling Brief: NxT1 Connectivity", pp. 1-2, copyright date 2001

This reference mentions networking, load distribution, and dynamic link removal/restoration for increased reliability, but a keyword search found no instances of "DNS" or "domain".

**Larkins:** D.B. Larkins, "Internet Routing and DNS Voodoo in the Enterprise", pp. 1-14, no later than 1 Dec. 1999

This reference discusses DNS at pages 10-13. Load balancing is mentioned on pages 3 and 4. A keyword search found no instances of "status". It appears therefore that this reference does not teach the present invention's claimed DNS resolution based on path or connection status.

**ServerIron:** "Re: LoadBalancing Products: Foundry ServerIron", pp. 1-3, dated 5 Jul 2000

This reference discusses DNS, load balancing, and other subjects, including Border Gateway Protocol (BGP). It does not appear to the undersigned to teach the present invention's claimed DNS resolution based on path or connection status.

**BGP:** "Border Gateway Protocol", pp. 1-5, copyright date 2001

This reference discusses Border Gateway Protocol (BGP), mentions DNS in diagrams on pages 2 and 3, but it does not discuss "domain name", and therefore apparently does not teach the present invention's claimed DNS resolution based on path or connection status.

**FAQ:** "Frequently Asked Questions on Multi-homing and BGP", pp. 1-7, no later than 07-Jun-2000

This reference discusses Border Gateway Protocol (BGP), routing, multiple connections, and other subjects. It does not appear to teach the present invention's claimed DNS resolution based on path or connection status.

### **Conclusion**

In view of the above, Assignee respectfully petitions the Office for accelerated examination of the claims. In the event of any questions, the undersigned invites a telephone call from the Office.

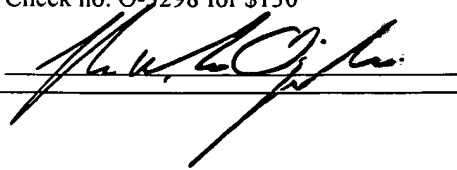
Dated April 21, 2003.

Enclosures  
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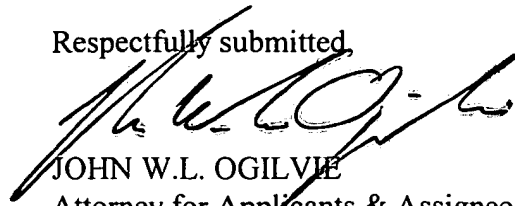
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I hereby certify that the correspondence listed below is being deposited with the United States Postal Service as Priority Mail, postage paid, on April 21, 2003 addressed to the Commissioner for Patents, Box DAC, P.O. Box 2327, Arlington, VA 22202:

Petition for Special Examining Procedure  
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Check no. O-3298 for \$130



Respectfully submitted



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